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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,180	09/28/2006	Djamschid Amirzadeh-Asl	DNAG-320	5207

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EXAMINER	
COHEN, STEFANIE J	
ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
08/02/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyipdocket@fulbright.com

Office Action Summary	Application No.	Applicant(s)	
	10/578,180	AMIRZADEH-ASL ET AL.	
	Examiner	Art Unit	
	STEFANIE COHEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/22/2010 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 39 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Clarification is needed on the definition of "old" plastic. It is not clear what is terms of degree or age is considered "old"

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 31, 34, 36, 40 and 44 are rejected under 35 U.S.C. 102(b) as being unpatentable by Kinsman et al (5972072).

Kinsman, col. 3, teaches a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities. The desulfurization composition is injected into molten iron from a blast furnace preferably in an amount of 4 to 20 pounds desulfurizer per ton of hot metal. The desulfurizing composition can be injected into the hot metal through a lance using a carrier gas or dumped into the hot metal as it is being poured into the ladle. At least for torpedo ladles, the desulfurization composition can be placed in the ladle before the hot metal is poured into it.

Further, Kinsman, col. 6, teaches the hydrocarbon material used can be low sulfur, high volatile coal, polyethylene, polypropylene or ground rubber tires.

Regarding claims 34 and 36, Kinsman, col. 3, teaches a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities.

Regarding claim 40, Kinsman teaches a composition comprising particulate hydrocarbon material and particulate alumina. These are both considered being in solid form.

Regarding claim 44, Kinsman teaches the desulfurizing composition can be injected into the hot metal through a lance using a carrier gas.

Claims 31-33, 36-37, 40 and 44 are rejected under 35 U.S.C. 102(b) as being unpatentable by Trout et al (6372013).

Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

The composition of the carrier material is 54-74% calcium oxide, 19-32% aluminum oxide, no more than 4% magnesium oxide, no more than 10% calcium fluoride, no more than 2.5% silicon dioxide, no more than 1.0% iron oxide, no more than 0.025% phosphorus pentoxide, no more than 0.025% titanium dioxide, no more than 0.5% manganese oxide, no more than 0.025% vanadium pentoxide, no more than 0.025% potassium oxide, no more than 0.05% sulfur and a combined loss on ignition and moisture content of no more than 1.5%.

Further, Trout, cols. 4 and 5, teaches although severe turbulence is not desired, a moderate amount of turbulence is beneficial to the process. Such can be provided, as is well known in the art, by adding up to about 2% of a hydrocarbon material such as rubber shavings, coal powder, or particulate plastic to the above described material flow. Such materials generate a stirring gas is which non-desirable oxygen is not present.

Regarding claims 32 and 33, Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

Regarding claims 36-37, Trout teaches the composition of the carrier material is 54-74% calcium oxide, 19-32% aluminum oxide, no more than 4% magnesium oxide, no more than 10% calcium fluoride, no more than 2.5% silicon dioxide, no more than 1.0% iron oxide, no more than 0.025% phosphorus pentoxide, no more than 0.025% titanium dioxide, no more than 0.5% manganese oxide, no more than 0.025% vanadium pentoxide, no more than 0.025% potassium oxide, no more than 0.05% sulfur and a combined loss on ignition and moisture content of no more than 1.5%.

Regarding claim 40, Trout teaches both the carrier material and the hydrocarbon material being in solid form.

Regarding claim 44, Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) in view of Trout et al (6372013).

Kinsman, col. 3, teaches a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities. The desulfurization composition is injected into molten iron from a blast furnace preferably in an amount of 4 to 20 pounds

desulfurizer per ton of hot metal. The desulfurizing composition can be injected into the hot metal through a lance using a carrier gas or dumped into the hot metal as it is being poured into the ladle. At least for torpedo ladles, the desulfurization composition can be placed in the ladle before the hot metal is poured into it.

Although Kinsman teaches desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman does not teach the particle size of the inorganic particulates.

Trout, abstract, teaches particulate carrier material for use with particulate passivated magnesium for injection into molten iron to desulfurize the iron, improve characteristics of the slag and increase iron yield.

Trout, col. 5, teaches particle size of the carrier material (about 200 mesh) and the passivated magnesium (about 12-20 mesh) is an important characteristic of the material.

200 mesh is about .075 mm (75 microns).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the particle size of the carrier material as taught by Trout as the particulate size of composition as taught by Kinsman because Trout teaches particle size is an important characteristic of the material will:

a) produce a more homogenous mixture of material being injected,

b) improve desulfurization agent flowability,

c) reduce desulfurization agent surging during injections,

d) reduce molten iron splashing related to surging,

e) reduce environmental issues from molten iron splashing, and

f) reduce the iron yield reduction related to splashing of molten iron.

Regarding claims 34 and 36, Kinsman, col. 3, teaches a desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities.

Regarding 35, Kinsman, col. 4, teaches when injecting separately or in combination from separate vessels, the ratios of the components may be varied in order to vary the composition of the material exiting the lance tip throughout the course of the injection or to introduce the components in sequence.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of particulates present in the desulfurization composition to obtain specific characteristics of the end product.

Claim 37 is rejected under 35 U.S.C. 102(b) as being unpatentable by Kinsman et al (5972072) as applied to claim 36 and further in view of Zasowski et al (20010010181).

Although Kinsman teaches desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman does not teach the composition comprising titanium dioxide.

Zasowski, paragraph 22 of the PGPUB, teaches a powdered denitrogenizing flux material 26, which includes calcium oxide (CaO) and at least one compound selected from the group consisting of oxides, silicates, carbonates of alkali and alkaline earth metals and oxides, fluorides, silicates and carbonates of metals selected from the group consisting of Calcium (Ca), Silicon (Si), Magnesium (Mg), Boron (B), Titanium (Ti), Barium (Ba) and Aluminum (Al). The most preferred flux materials are CaO--BaO--TiO2--(Al2O3), CaO--TiO2(Al2O3) and Calcium-Boron oxide bearing fluxes. Alternatively, any other flux that is capable of achieving the desired denitrogenization could be substituted.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute in a preferred flux CaO--TiO2(Al2O3) as taught by Zasowski for the alumina as taught by Kinsman because both are fluxes that are capable of achieving the desired denitrogenization

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to use synthetic materials instead of natural materials to save money on producing the product as a whole and to ensure purity of the materials.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) as applied to claim 31 and further in view of Doliwa (4398946).

Although Kinsman teaches desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman does not teach the hydrocarbon material comprising plastic comprising nitrogen.

Doliwa, cols. 2 and 3, teaches the A method of producing homogeneous cast-iron melts from a heterogeneous charge containing a proportion of steel scrap of up to very high amount as well as other ordinary charge components, characterized by the fact that by the addition of compacts of silicon carbide or other alloying substances and/or ordinary charge components containing slag-forming admixtures from the ternary system 8-18% CaO-10-40% SiO.sub.2 --2-16% Al2O3 which contain additions of hydrocarbon and/or hydrocarbon-nitrogen compounds, a reductive furnace atmosphere and a limiting of suboxide-containing primary slags, a practically loss-free carburization and silicification as well as a favorable condition of nucleation of the homogenized melt is brought about, as well as compacts for carrying out the said method, are disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute in a hydrocarbon-nitrogen compounds as taught by Doliwa for the hydrocarbon material as taught by Kinsman because Doliwa teaches, cols. 2 and 3, both hydrocarbon and hydrocarbon-nitrogen compounds within a very short time produce a reductive atmosphere and a limiting of the suboxide-containing primary slags and thus a practically loss-free introduction of the slag components.

Claims 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) as applied to claim 31.

Although Kinsman teaches desulfurization composition containing from about 3% to about 20% particulate metallic aluminum, about 5% to about 30% particulate alumina, about 0.5% to about 12% particulate hydrocarbon material or other gas generating composition and the balance lime plus impurities, Kinsman does not teach the hydrocarbon material is a used hydrocarbon material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use old plastic for the hydrocarbon material to save money on producing the product as a whole.

Not sure what is meant by old plastic (how old is "old?" 112 2nd if not defined. Could ground rubber tires be considered old plastic?

Claims 41-43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) as applied to claim 31.

Further, Kinsman, col. 4, teaches the reagent may be added in whole as a blend or may be added separately or in combination from individual storage and injection vessels so as to approximately match the preferred blend composition above as closely as possible.

It would have been obvious to one of ordinary skill in the art at the time of the invention to blend the hydrocarbon material in their molten state with the particulate components to ensure a homogenous blend enters the melt.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain a blend with the blend having particulate particle sizes to ensure optimal final properties of the melt.

Regarding claim 45, Kinsman teaches the desulfurizing composition can be injected into the hot metal through a lance using a carrier gas or dumped into the hot metal as it is being poured into the ladle.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to dump into the hot melt the composition in any shape or form such as lumps to obtain optimal properties of the final product.

Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsman et al (5972072) as applied to claim 31.

Further, Kinsman, col. 4, teaches the reagent may be added in whole as a blend or may be added separately or in combination from individual storage and injection vessels so as to approximately match the preferred blend composition above as closely as possible.

It would have been obvious to one of ordinary skill in the art at the time of the invention to blend the hydrocarbon material in their molten state with the particulate components to ensure a homogenous blend enters the melt.

Regarding claim 47, Kinsman teaches particulate hydrocarbon material which can be interpreted as in the form of a granule.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is (571)270-5836. The examiner can normally be reached on Monday through Thursday 9:3am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 5712721234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stefanie Cohen 7/20/2010

SC

July 28, 2010

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793